

Notice of Allowability	Application No.	Applicant(s)	
	10/618,662	GUNTHER, HERBERT	
	Examiner	Art Unit	
	Vinod D. Patel	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 7/15/03.
2. ☒ The allowed claim(s) is/are 1-24.
3. ☒ The drawings filed on 15 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>10/21/03</u> 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Christopher Brody on 1/7/05.

The application has been amended as follows:

Claims 1-24 has been replaced with following claims 1-24.

1. (currently amended) In a hot runner system having a temperature sensor (10), the improvement comprising the temperature sensor (10) having ~~A temperature sensor (10) for use in a hot runner system with~~ a resistance element (20) adapted for connection to a control circuit of a heating system (40) by connection contacts (30), **wherein** the resistance element (20) has at least one sub-segment (24) on its longitudinal or cross-segmental extension which has a greater electric resistance than the remaining area (22) of the resistance element (20).
2. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the resistance element (20) consists of at least one segment (22) and at least one sub-segment (24), the electric resistance of the sub-segment (24) being greater than the electric resistance of the segment (22) at a pre-specified temperature.
3. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the electric resistance of the sub-segment (24) is at least one order of magnitude greater than the electric resistance of the segment (22), preferably by a factor of 2 to 100.
4. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the segment (22) and/or the sub-segment (24) form a U-shaped arc or a loop.

5. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the segment (22) and/or the sub-segment (24) are at least in part in meandering form.
6. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the segment (22) has a cross-segmental dimension covering the majority of the length (L) of the temperature sensor (10) which is greater than the cross-sectional dimension of the sub-segment (24).
7. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the segment (22) and sub-segment (24) form a resistive path of uniform thickness, the width of the segment (22) being greater than the width of the sub-segment (24).
8. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 7, **wherein** the resistive path consists of a fired conductive paste.
9. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the segment (22) and/or the sub-segment (24) are formed by at least two resistive paths arranged one above the other, these being separated by insulating layers.
10. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the segment (22) and the sub-segment (24) are covered by or imbedded in an insulating layer (26).
11. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 9, **wherein** the insulating layers are ceramic dielectric layers.
12. (currently amended) The hot runner system [[Temperature sensor]] as defined in claim 1, **wherein** the segment (22) and the sub-segment (24) have different material compositions.

13. (currently amended) Heating device (40) for hot runner systems with a configuration of heating elements (42) which are in thermal contact with a manifold or nozzle body (K), and with a temperature sensor (10) having a resistance element (20) adapted for connection to a control circuit of a heating system (40) by connection contacts (30), wherein the resistance element (20) has at least one sub-segment (24) on its longitudinal or cross-segmental extension which has a greater electric resistance than the remaining area (22) of the resistance element (20) [[as defined in claim 1]], and further wherein the temperature sensor (10) is a measuring element located on or in the manifold or nozzle body (K).
14. (original) Heating device as defined in claim 13, **wherein** the heating elements (42) consist of electrical heat conducting paths (44) adapted to suit the performance requirements.
15. (original) Heating device as defined in claim 13, **wherein** the heat conducting paths (44) are at least partially in meandering form and/or bifilar.
16. (original) Heating device as defined in claim 14, **wherein** the electric resistance of the heat conducting paths (44) in an intermediate section (B) of the manifold or nozzle body (K) is lower than in the top area (O) or the end or tip area (E).
17. (original) Heating device as defined in claim 14, **wherein** the heat conducting paths (44) have or form at least one zone (46) in the end area or tip area (E) of the manifold or nozzle body (K) which has an electric resistance greater than that in the remainder of the heat conducting paths (44), with the sub-segment (24) of the temperature sensor (10) penetrating into a recess (47) of the high-resistance heat conductor zone (46).
18. (original) Heating device as defined in claim 17, **wherein** the thermal sensor segment (24) is surrounded by closely grouped heat conducting paths (44) in the high-resistance zone (46).

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19. (original) Heating device as defined in claim 14, **wherein** the heat conducting paths (44) are applied to an insulating layer (58) and covered by a further insulating layer (59).
20. (original) Heating device as defined in claim 19, **wherein** the temperature sensor (10) and heat conducting paths (44) are applied at the same level to the insulating layer (58).
21. (original) Heating device as defined in claim 19, **wherein** the heat conducting paths (44) and the insulating layers (26, 58, 59) consist of fired foils and/or fired thick-film pastes.
22. (original) Heating device as defined in claim 19, **wherein** at least the insulating layer (58) is a ceramic dielectric layer.
23. (original) Heating device as defined in claim 19, **wherein** the dielectric coating (58) is permanently applied to the manifold or nozzle body (K) and is pre-stressed (toughened) in relation to the latter after at least one firing process.
24. (original) Heating device as defined in claim 19, **wherein** the dielectric coating (58) is permanently applied to a base element adapted to be adhered to the manifold or nozzle body (K) through thermal contact.

Allowable Subject Matter

2. Claims 1-24 are allowed.
3. The following is an examiner's statement of reasons for allowance:

Although the prior art is replete with teachings of hot runner systems and temperature sensors separately, the prior art does not teach to one of ordinary skill in the art the combination of a hot runner system and a temperature sensor having a resistance element, wherein the resistance element has at least one sub-segment on its longitudinal or cross-segmental extension which has a greater electric resistance than the remaining area of the resistance element.

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Although temperature sensors similar to that described above are known in the art, it is the examiners opinion that it would not have been obvious to a person of ordinary skill in the art to provide temperature sensor as described. Further, one of ordinary skill would not find motivation in the prior art to modify the hot runner system to include such a temperature sensor. In the examiner's opinion any combination of prior art of record would be improper hindsight based on applicant's disclosure.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Friese (US5406246), Mostehi (US5436494), Kojima (US5332991), Kaihara (US6140906), Hafele (US5202665) relate to temperature sensors, Juliano (US5973296) relates to thick film heater for injection mold runner nozzle, Gunther (US6022210 & US6805549) relate to hot runner nozzle.


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinod D. Patel whose telephone number is 571-272-4785. The examiner can normally be reached on 7.30 A.M. TO 4.00 P.M..

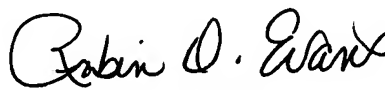
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VP
January 7, 2005


Vinod Patel
Patent Examiner


ROBIN O. EVANS
PRIMARY EXAMINER
1/10/05